Exercise 1: PRINCIPLES OF FLIGHT

Purpose To review and reinforce your knowledge of principles of flight

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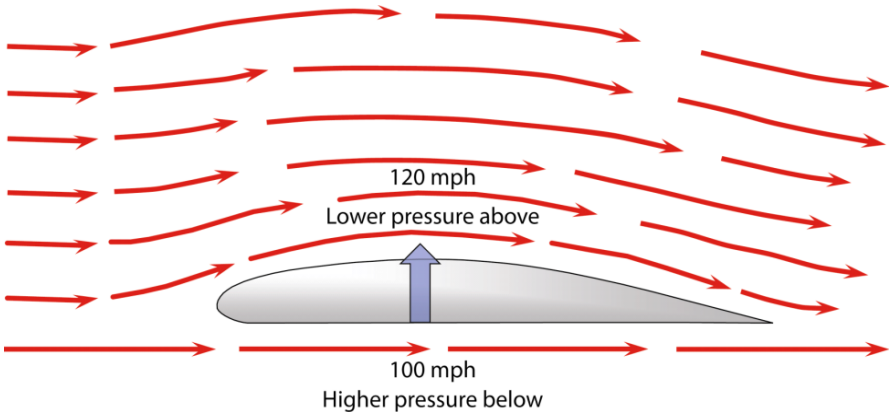
Directions Print out and complete. Items 1-15 are short answer. Write your answer(s) in the space(s) provided.

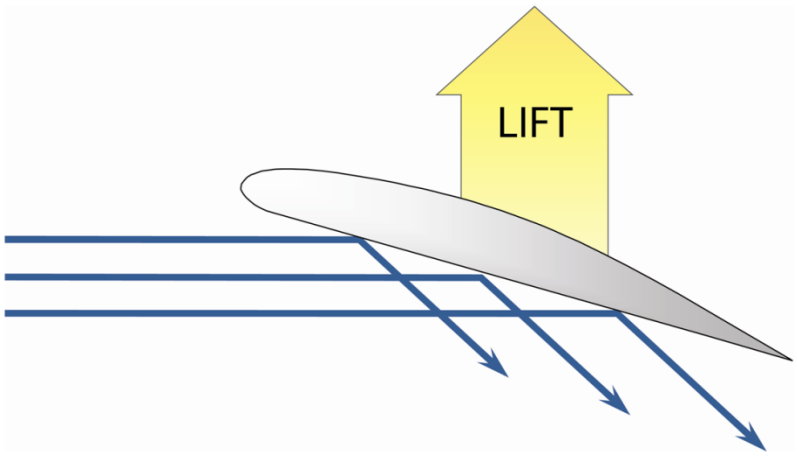
Fill in the Blank(s)

1. The creation of lift is explained by two propositions. Identify each using the following graphics.

A. _____

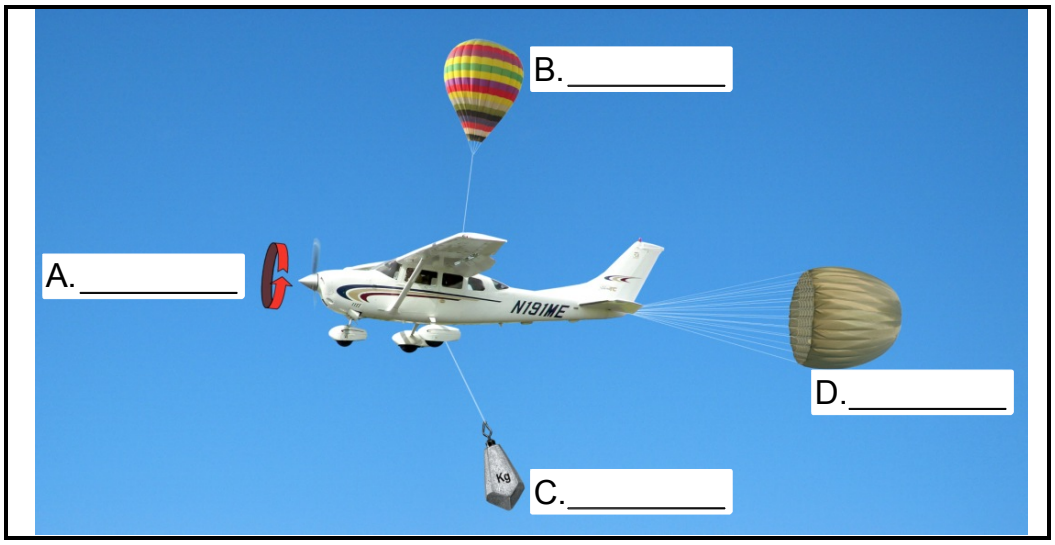


B. _____

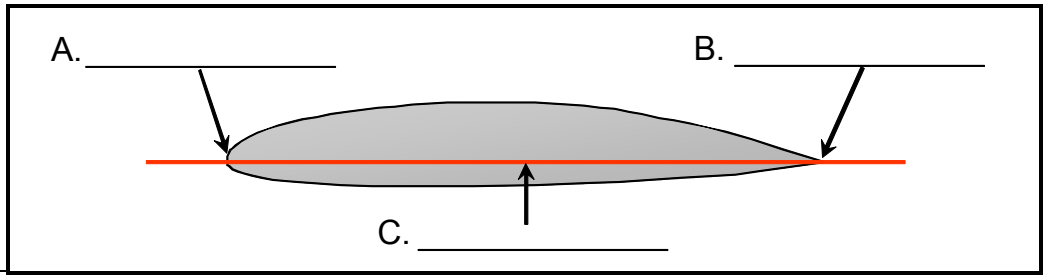


Fill in the Blank(s) (Cont'd)

2. Identify the forces affecting an aircraft in flight.

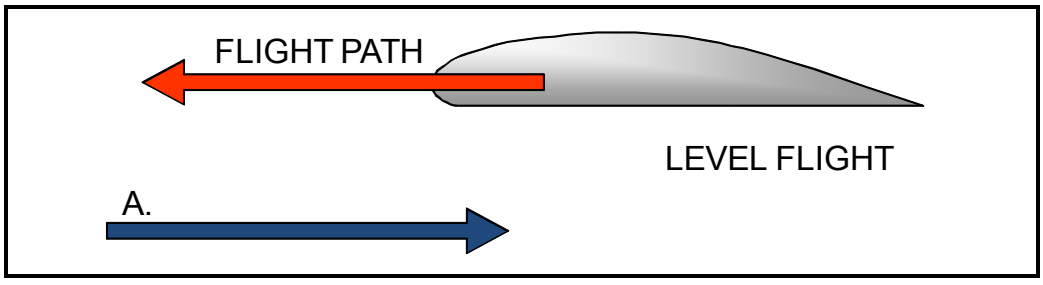


3. An airfoil creates lift. Label the parts of an airfoil.

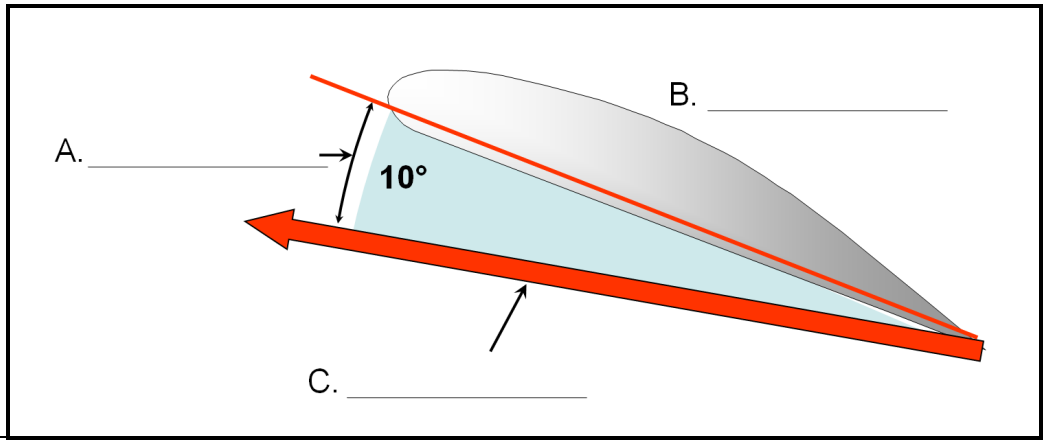


Fill in the Blank(s) (Cont'd)

4. For an aircraft in flight, wind flows in a direction parallel with and opposite to the direction of flight. Identify this wind.

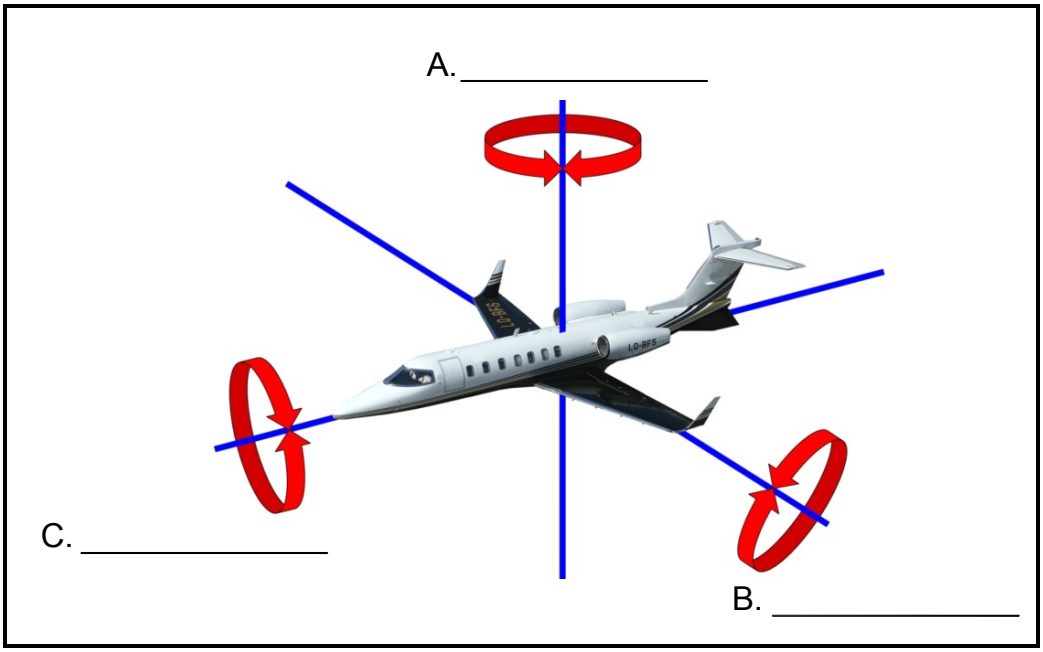


5. Lift is increased or decreased as the pitch of the airfoil is changed. Label the three components affecting this phenomenon.

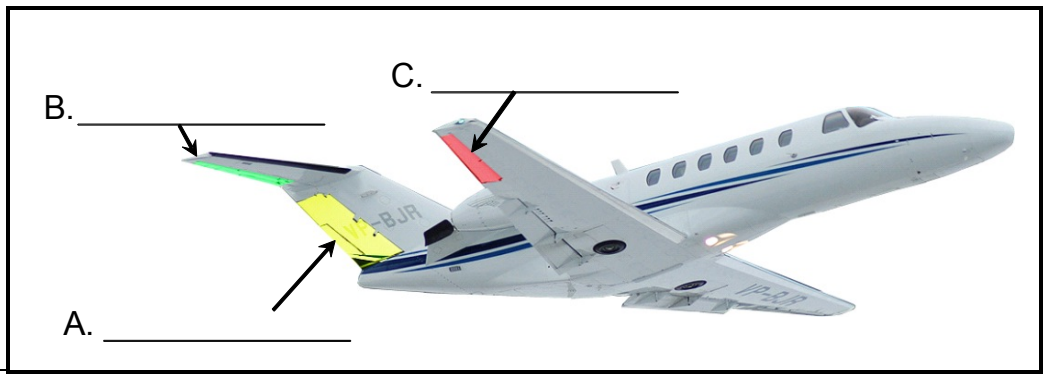


Fill in the Blank(s) (Cont'd)

6. Changes in an aircraft's attitude are described as movement about three axes. Name them.

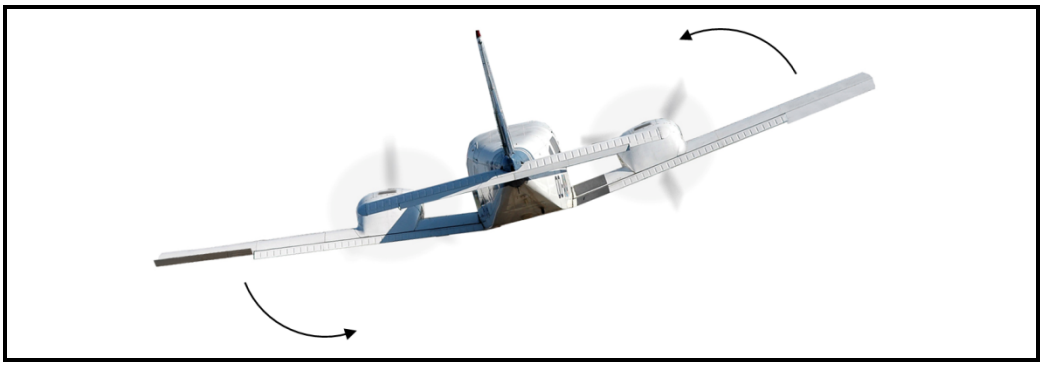


7. What are the primary control surfaces affecting movement about these axes?



Fill in the Blank(s) (Cont'd)

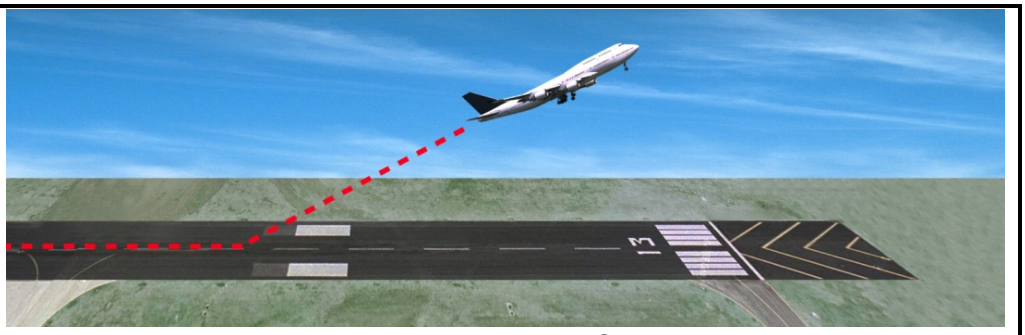
8. Complete the following labels.



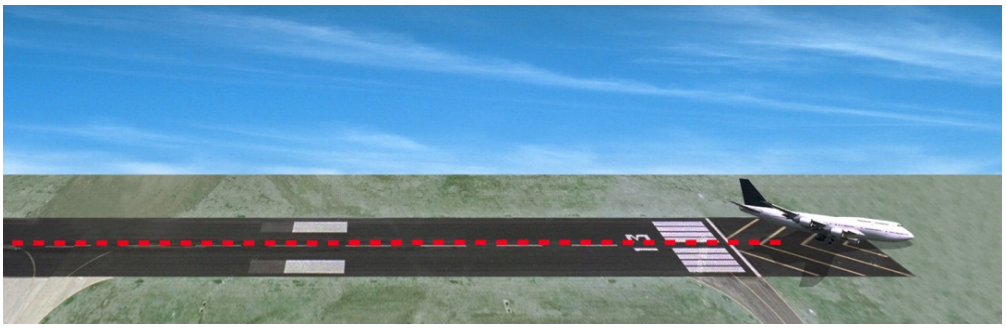
Fill in the Blank(s) (Cont'd)

9. Air density greatly affects aircraft performance. What are three variables that determine air density?

10. Indicate the conditions that affect aircraft performance.



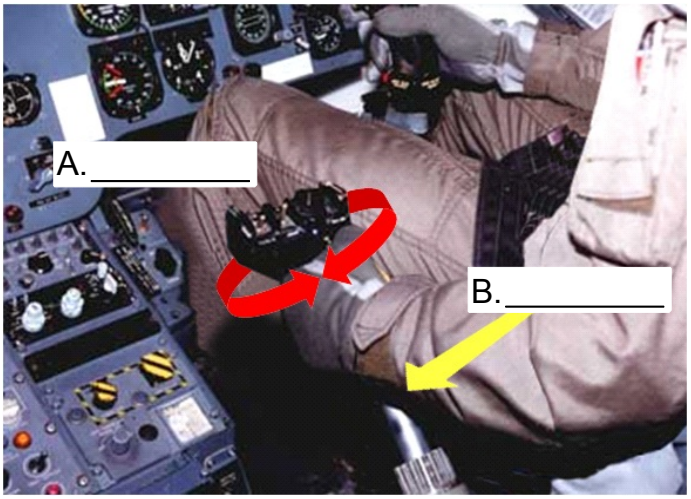
A. _____ , B. _____ at C. _____



D. _____ , E. _____ at F. _____

Fill in the Blank(s) (Cont'd)

11. The rotor blade of a helicopter is an airfoil and functions the same as a wing on a conventional aircraft. Name the three devices that control the rotor blade.
12. Label the flight controls.



Fill in the Blank(s) (Cont'd)

13. Lift is created as air flows smoothly over an airfoil. A stall occurs when the _____ of _____ is exceeded.
14. Air stops flowing smoothly over an airfoil between _____ and _____ degrees angle of attack.
15. What are the three primary causes of stalls?

SUPPLEMENTAL EXERCISE: PRINCIPLES OF FLIGHT
(Continued)

Fill in the Blank(s) (Cont'd)

13. Lift is created as air flows smoothly over an airfoil. A stall occurs when the _____ of _____ is exceeded.

    ANSWER: *critical angle; attack*

14. Air stops flowing smoothly over an airfoil between _____ and _____ degrees angle of attack.

    ANSWER: *15; 20*

15. What are the three primary causes of stalls?

    ANSWER: *Insufficient airspeed; excessively violent flight maneuvers; severe wind shear*

SUPPLEMENTAL EXERCISE: PRINCIPLES OF FLIGHT
(Continued)

Student Answer Sheet

Question 1:
A. Bernoulli's Principle
B. Newton's Third Law of Motion

Question 2:
A. Thrust
B. Lift
C. Weight
D. Drag

Question 3:
A. Leading edge
B. Trailing edge
C. Chord line

Question 4:
A. Relative wind

Question 5:
A. Angle of attack
B. Chord line
C. Flight path

Question 6:
A. Vertical
B. Lateral
C. Longitudinal

Question 7:
A. Rudder
B. Elevator
C. Aileron

Question 8:
A. Yaw
B. Pitch
C. Roll

Question 9:
A. Temperature
B. Humidity
C. Altitude

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